SYNOPSIS

on

‘‘Taxonomic Studies of Multicellular Algal flora along Kamla basin in Madhubani District, Bihar’’

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[Botany]

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Introduction

Algae are the oldest in plant kingdom to come on this earth. They are heterogeneous assemblage of autotrophs, which are diverse with respect to their habitats, organizations, distributional pattern, physiological behaviour, reproduction, and ecological significance. As compared to other plant groups, the algae are mostly freshwater aquatic while some are terrestrial also. They occur in the habitat either as free-floating mat or epiphytes, lithophytes and even benthos.

The Kamla originates from the Churia Range near Maithan which is near Sindhuli Gadhi in Sindhuli District of Nepal (Latitude: 26° 34' 59.99" N Longitude: 86° 08' 60.00" E) and sprawls over a catchment area of 7,232 square kilometres out of which 4,488 square kilometres lies in Bihar in India and the rest 2,744 square kilometres in Nepal.

Madhubani district of Bihar is known as a paradise to those interested in algae is practically unexplored where no work has been done yet no work was carried out especially on the multicellular algal flora of the state of Bihar. Madhubani district is one of the thirty-eight districts of Bihar, India, and is a part of Darbhanga division. Its administrative headquarter is in Madhubani. The district has an area of 3,501 square kilometres and has a population of 4,487,379.

The plains of Bihar, adjoining Nepal, are drained by several rivers that have their catchments in the steep and geologically nascent Himalayas. The Kamala, the Gandak, the Burhi Gandak, the Bagmati, and the Adhwara group of rivers originate in Nepal, carry high discharge and very high sediment load and drop it down in the plains of Bihar (Madhubani) and due to this divides the river into several meandering channels for its passage. This leaves behind sediment filled paths as deserted channels locally known as Mans and Dhars.

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These sediment rich areas of water spread across the entire Kamala region give rise to swamps and wetlands especially in Madhubani (Jainagar, Rajnagar, Khajauli, Babu Barahi, Andhra Tharhi, Jhanjharpur, Lakhnaur, Madhepur) district. The area is inundated by recurring flood water. The receding flood water leaves behind a number of water pockets, low lying lands, specially the chaurs are filled with water almost for whole year which has the potentiality of inhabiting rich algal flora mostly multicellular.

Review of Literatures

From literature it appears that very little amount of work has been done on the algal flora of Bihar. Apart from few references (Ahmad & Kargupta 1990, Kargupta & Jha 2004, Kargupta and Kumari 2016, Kumari *et al* 2022, Jha *et al* 2022, Jha & Jha 2023) most of the works were carried out on orders like Oedogoniales and Zygnematales but practically no work was carried out especially on the multicellular algal flora of the state of Bihar.

Aims and objectives

(a) To collect information regarding the diversity of fresh water Multicellular algae along river Kamala basin in madhubani district up to species level.

(b) To get a clear picture of the occurrence of various taxa available in the area and to note their distributions in India and abroad.

(c) To focus on algal biodiversity of the area (Madhubani District).

(d) To find out the floral resemblances between habitats and to know how closely they are related in terms of floral similarities.

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Methodology and Plan of work

1. Field study with respect to random collection of algae and their preservations will be resorted from Dhars / Chaurs / Wetlands along river Kamala basin in Madhubani district.
2. The collected samples will be washed thoroughly with tap water to remove dirt and solid material.
3. A part of each collection will be preserved in formalin for further use.
4. During each collection pH, temperature, water levels and turbidity of water will be noted.
5. For identification of Multicellular algal sample, we will prepare slide by mounting a small part of sample on slide.
6. This slide will then be observed microscopically using compound optical microscope.
7. The dimension of algal cell will be measured and drawn on the paper with the help of camera lucida.
8. Identification of algal specimens based on conventional monographs and standard literature.
9. Distribution and periodicities of taxa collected will be observed.
10. All the collected vials would be kept in algal herbarium of LNMU for future references.
11. Temporary screening of collected materials by making slides using 10% glycerine in water.
12. Micrometry of Multicellular Algae with the help of calibrated microscope.
13. Microphotography & camera drawing of various features algae taxa for identification.
14. Study of ornamentation of spore walls by treating them with KOH and lactic acid.
15. Acquaintance with work on taxonomy of Multicellular algal would be made by consulting research papers published in national & international journals.
16. Preparation of reference cards and noting of the distribution records of taxa published by workers.
17. Knowledge on reference citation and preparing scientific manuscripts in conferences/symposia.
18. Discussion with the supervisor on pertinent points during observation and identification of taxa up to species or subspecies level.

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